An Anthology of Applied Computer Technologies

Zulkefli Muhammed Yusof
M.M Hafizur Rahman

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17. BASIC EMOTIONS VERIFICATION AND IDENTIFICATION USING GAUSSIAN MIXTURE MODEL (GMM) FEATURES EXTRACTION

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ABSTRACT

The study of human-computer-interaction and emotions has opened wider interest to access human brain. The continuous association flanked by brain activities and human emotions against visual-audio stimulus enables medical machine such as EEG (electroencephalogram) to capture and amplify the weak electrical flows beneath the human scalp. There are specific areas of the human brain respond to emotional changes which allow identification of human emotions. In this research, the EEG signals were collected from 20 healthy adult in age range 20-30 and 12 healthy children in age range 7-10 using EEG electrodes attached on the subjects' scalp. Against the elliptic filtering, we implement decimation and downsample to reduce sampling size After processing the signal, 3-modes of Gaussian Mixture Model (GMM) probability estimation was employed for features extraction. The features such as Mean, Variance and Initial Centroid were extracted from each channel. Multi Layer Perceptron (MLP) was used to train and test the data for emotion verification and identification. Finally, the features vector learns 4 identical target emotion categories including calm, fear, happy and sad. The